IMPACT OF APHID INSECTICIDE TIMING ON COTTON YIELD AND COTTON LEAFROLL DWARF VIRUS

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Abstract

Cotton aphid, *Aphis gossypii*, infest the majority of cotton acreage in Georgia and is a potential pest. However, research conducted in Georgia rarely demonstrates a positive yield response to aphid control. Georgia growers typically wait on a fungal epizootic which causes aphid populations to crash in early to mid-July. Cotton aphid is a known vector of Cotton leafroll dwarf virus (CLRDV) which was recently detected in Georgia and many additional states across the Cotton Belt. For this reason, current efforts are reevaluating aphid management in cotton. More specifically evaluating the impact of aphid control on the incidence of CLRDV and yield. Field trials were conducted in Tift County, GA during 2019, 2020, and 2021. Trials were planted the second week of May in all years and treatments included an untreated control and seven aggressively protected treatments initiated on different dates (weeks). The most aggressively protected treatment included weekly applications of Assail 30SG insecticide at 2.5 ozs/acre initiated approximately two weeks after planting (WAP); a total of seven applications were made in this treatment with the objective of eliminating aphids. Insecticide application in the second most aggressive treatment was initiated approximately 3 WAP and treated weekly for a total of six applications. Additional treatments were initiated in the following weeks in a similar manner. Prior to initial insecticide application, aphids were enumerated on plots to receive the initial insecticide application (i.e. untreated on that date). Aphids were also enumerated on all plots just prior to the fungal epizootic. Incidence of CLRDV was determined in each plot in August each year using PCR methods. Aphid populations peaked in late June in 2019 (81 per leaf), early July in 2020 (73 per leaf), and early July in 2021 (< 10 per leaf). We were unable to eliminate aphids, in spite of weekly applications of an effective insecticide. In general insecticides reduced aphid populations by approximately 90 percent. Significant differences in yield were not observed among treatments in any year. Significant differences in CLRDV incidence were not observed among the most aggressively protected treatment compared with the untreated in any year. Mean CLRDV incidence was 100, 89, and 45 percent in 2019, 2020, and 2021 respectively. It should be noted that CLRDV symptomatic plants were rarely observed in these trials. In conclusion, cotton aphid could not be eliminated with insecticide, yield was not impacted by any aphid control treatment, and incidence of CLRDV was not impacted by aggressive aphid control.